(c) Avenues for cooperation in renewable energy sector are being explored with several countries that include, *inter-alia,* Brazil, Denmark, Germany, Japan, Iceland, Italy, Philippines, South Africa, Thailand and USA.

(d) Renewable energy products are already being exported mainly in the wind energy, small hydro, solar and biomass energy sectors. The prospects for such exports are expected to only improve with rising global oil prices.

Shortage of power

1015. SHRI DARA SINGH:
SHRI RAMDAS AGARWAL:

Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

(a) whether the country faces acute shortage of energy and is spending more than Rs. 1,00,000 crore on power generation and distribution;

(b) whether solar energy holds the key for power-hungry India, but the same has not been adequately tapped;

(c) what concrete steps Government has taken so far to tap the sun for energy, when advanced solar energy technologies are available; and

(d) the details of Government's plans for expansion and utilization of solar energy resources for domestic and commercial purposes during the Eleventh Five Year Plan?

THE MINISTER OF STATE OF THE MINISTRY OF NEW AND RENEWABLE ENERGY (SHRI VILAS MUTTEMWAR): (a) to (d) Yes, Sir. There is gap in the demand and supply of power in the country. The renewable energy sources such as wind, small hydro and biomass have contributed about 11274 MW to the capacity addition of power generation in the country.

India received solar energy equivalent to over 5,000 trillion KWh per year. The daily average solar energy incident over India varies from 4-7 kwh per square meter depending upon the location. Solar energy can be harnessed through two routes, namely solar photovoltaic (PV) and solar thermal, by direct conversion to electricity and heat energy respectively, Thus solar energy has potential to meet growing demand of energy. The high initial cost of solar energy devices and systems, and lack of sufficient awareness are the main reasons for low utilization of this resource. However, some of the solar energy systems are becoming cost competitive to the conventional alternatives, when compared over the life of the systems. Solar water heaters, solar cookers and photovoltaic systems for small power applications in remote areas are the examples.

The Ministry has taken several steps to increase the utilization of solar energy in the country during the 11th plan, which include (i) expanded programme of the Ministry to encourage utilization of solar energy systems through subsidy or soft loans, (ii) incentive to manufacturers, commercial users and power project developers, (iii) research and development to reduce the cost, improve the efficiency and performance of solar energy systems, and (iv) support to Akshya Urja shops to provide additional channels for sale and after-sales servicing of solar energy systems and (v) create awareness about the solar energy systems and their benefits.